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745 FIFTH AVENUE- 10TH FL.
NEW YORK, NY 10151

EXAMINER

STORM, DONALD L

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/090,861

Applicant(s)

GORONZY ET AL.

Examiner

Donald L. Storm

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7,8,11-17,19 and 20 is/are rejected.
- 7) ☒ Claim(s) 6,9,10 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/5/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The PRELIMINARY AMENDMENT, filed March 5, 2002, is present in the application file, and it has been entered.

Specification

2. The specification is objected to because the term "Eigenpronunciations" appears throughout the specification and claims, but is not adequately defined. There appears to be an attempt to define Eigenpronunciations at page 4, lines 25-28; however, that definition does not support claims 5 and 6. Claim 6, dependent to claim 5, must further limit claim 5. Since claim 6 appears to claim Eigenpronunciations according to the possible definition found on page 4, the Eigenpronunciations of claim 5 must be more broadly defined than claim 6, and hence further limited by claim 6. However, the disclosure as filed does not adequately define any broader meaning of the term "Eigenpronunciations".

The Examiner is unable to locate a generally accepted meaning of this terminology in arts related to the instant disclosure. The term is so different from that which is generally accepted in the art to which this invention pertains that the Applicant should consider providing clarification or correlation with the art-accepted terminology. The rule that an Applicant can act as his own lexicographer to define terms presupposes that the nonstandard terminology is definition is clearly defined in the disclosure. See 37 CFR 1.71 and MPEP 608.01.

3. The Examiner notes, without objection, that page 3, line 2, of the specification has explicit reference to the claims by claim number. As the claim numbers related to this subject matter may

change by amendment to the claims or by renumbering at the time of allowance, it may develop that reference to the claims by number may refer a claim incorrectly. It is in the best interests of the patent community that the Applicant be aware of these editorial situations and consider changes during normal review and revision of the specification.

4. The Examiner notes, without objection, that this application is informal in the arrangement of the specification. The following guidelines illustrate the preferred layout and content for patent applications, and items should appear in upper case, without underlining or bold type, as section headings. It is in the best interests of the patent community that the Applicant be aware of these editorial situations and consider changes during normal review and revision of the disclosure.

In current Office practice, explained in MPEP § 608.01(a), the specification should contain:

TITLE OF THE INVENTION *(at the top of the first page of the specification)*
CROSS-REFERENCE TO RELATED APPLICATIONS *(if applicable)*
STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR
DEVELOPMENT *(if applicable)*
THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT *(if applicable)*
INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A
COMPACT DISC *(if applicable, see 37 CFR 1.52(e)(5))*
BACKGROUND OF THE INVENTION *(two parts)*
FIELD OF THE INVENTION *(may also be titled "Technical Field")*
DESCRIPTION OF THE RELATED ART *(may also be titled "Background Art")*
BRIEF SUMMARY OF THE INVENTION
BRIEF DESCRIPTION OF THE DRAWINGS
DETAILED DESCRIPTION OF THE INVENTION
CLAIM or CLAIMS *(commence on separate sheet or electronic page, each element or step of the claim should be separated by a line indentation; there may be plural indentations to further segregate subcombinations or related steps)*
ABSTRACT OF THE DISCLOSURE *(on a separate sheet, narrative of the claimed matter)*

5. The Examiner notes, without objection, the possibility of informalities in the abstract. It is in the best interests of the patent community that the Applicant be aware of these editorial situations and consider changes during normal review and revision of the abstract:

The phrase "(Fig. 1)" (second paragraph) is unconnected to the subject matter. It lengthens the abstract unnecessarily. Its intent is ambiguous when not accompanied by appropriate figures.

Claim Informalities

6. Claims 6, 9-10, and 18 are objected to as being (directly or indirectly) dependent upon a rejected base claim. See MPEP § 608.01(n)V. The claim(s) would be allowable over the prior art of record if rewritten to include all of the limitations of the base claim and any intervening claims. The claims should also be rewritten to overcome any objections, especially as appearing in this Office action. Certain assumptions that make the limitations clear have been considered for the claims, as described next or elsewhere in this Office action.

7. Claim 7 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "said Eigenpronunciations" needs clarification. Because no Eigenpronunciations were previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to --Eigenpronunciations--.

8. Claim 9, and by dependency claim 10, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "said pronunciation-related position" (final line) needs clarification. Because no related-related position was previously recited, it may be unclear as to what element

this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase to refer to --a pronunciation-related position--.

9. Claim 12 is objected to for the same reasons as claim 7 because the limitations are recited using obviously similar phrases.

10. Claim 14 is objected to under 37 CFR 1.75(a) because the meaning of the phrase “said starting or canonical lexicon (SL)” (line 2) needs clarification. Because no starting or canonical lexicon (SL) was previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase to refer to --a starting or canonical lexicon (SL)--.

11. Claim 18 is objected to for the same reasons as claim 7 because the limitations are recited using obviously similar phrases.

12. The Applicant is advised that if a response to the objection to the specification confirms page 4, lines 25-28 as the definition of the term “Eigenpronunciations”, claim 6 will be objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of previous claim 5. The Examiner recommends that claim 6 should be canceled and the subject matter combined into claim 5.

The Examiner recommends that the subject matter of claim 6 be combined with the other claims that recite “Eigenpronunciations” so that reference to the specification to define the

claimed subject matter is avoided. Terminology should be defined in the claims at least the first time used, if a concise and accurate definition is available.

13. The form of the claims does not follow Office practice. While there is no set statutory form for claims, the present Office practice is to insist that each claim must be the object of a sentence starting with "I (or we) claim", "The invention claimed is", or the equivalent. The Applicant is encouraged to insert a desired introduction before claim 1. If, at the time of allowance, appropriate terminology is not present, it is inserted by the technical staff. See MPEP § 608.01(m).

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claims 11, 13-17, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

16. Regarding claim 11, the term "and/or the like" (lines 2-3) is a relative term that renders the claim indefinite. The term "and/or the like" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. An artisan doing speech recognition would not know at what point something like a weighted mixture or superposition would come

within the scope of the claim because nothing within the disclosure establishes when a sufficient “likeness” to a weighted mixture or superposition occurs.

17. Regarding claim 13, and by dependency claims 14-16, the term “and/or the like” (lines 4-5) is a relative term that renders the claim indefinite. The term “and/or the like” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. An artisan doing speech recognition would not know at what point something like a given utterance or recognition result would come within the scope of the claim because nothing within the disclosure establishes when a sufficient “likeness” to a given utterance or recognition result occurs.

18. Regarding claim 15, the term “or the like” (line 3) is a relative term that renders the claim indefinite. The term “or the like” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. An artisan doing speech recognition would not know at what point something like actually uttered phones or phonemes would come within the scope of the claim because nothing within the disclosure establishes when a sufficient “likeness” to actually uttered phones or phonemes occurs.

19. Regarding claim 17, the term “and/or the like” (line 2) is a relative term that renders the claim indefinite. The term “and/or the like” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. An artisan doing speech recognition

would not know at what point something like recognition related information or pronunciations variants would come within the scope of the claim because nothing within the disclosure establishes when a sufficient “likeness” to recognition related information or pronunciations variants occurs.

20. Regarding claim 20, the term “and/or the like” (line 4) is a relative term that renders the claim indefinite. The term “and/or the like” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. An artisan doing speech recognition would not know at what point something like a computer or a digital signal processor would come within the scope of the claim because nothing within the disclosure establishes when a sufficient “likeness” to computer or a digital signal processor occurs.

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Larkey and Nitta

22. Claims 1-5, 7-8, 12-14, 17, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larkey [US Patent 5,127,055] in view of Nitta [US Patent 5,255,342].

In the paragraphs that follow, note that the alternative claim limitations that are met by the references are NOT enclosed in parentheses. The particular location within the reference and terminology of the reference that meet the claim limitation are enclosed in brackets []. Alternative limitations of the claims are enclosed in parenthesis (); those limitations within parentheses were considered because a different alternative setting forth the claim was met by the reference citations.

23. Regarding claim 1, Larkey [at title] describes a method for recognizing speech by describing the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

possible pronunciation rules [at column 1, lines 54-56, as patterns which characterize a manner of pronouncing];

an APR determined (or generated) in the PS [at column 6, lines 36-51, as a list of candidates and alternates of selected reference patterns];

the APR is determined in accordance with a current pronunciation (or accent) of a current speaker [at column 5, lines 60-65, as the best candidate and alternates for each utterance of the speaker are placed in the recognition event record];

(a CL or) a dictionary of variants is employed for recognition [at column 4, lines 14-30, as the reference patterns that may be variants corresponding to a same word or phrase is operated in accordance with speech recognition];

the APR is applied to adapt the (CL or) dictionary [at column 8, lines 58-59, as the content of the recognition event record is used to effect reference pattern adaptation];

the dictionary is adapted to the current speaker [at column 13, lines 52-64, as the reference patterns are updated based upon the speaker in speech context];

thereby including speaker specific variants to the CL [at column 13, lines 52-54, as update the reference patterns to provide representations of words to be recognized];

the variants are pronunciation variants [at column 13, lines 54-64, as the reference patterns represent the same words differently pronounced].

Larkey [at column 1, lines 54-67] describes a plurality of those patterns, that is, stored reference patterns that characterize a manner of pronouncing. However, Larkey does not explicitly show that the stored set of rules describe a PS.

Nitta [at column 1] describes aspects of conventional speech recognition, including much of the conventional method of Larkey -- the stored set of reference patterns, features extraction, matching. Nitta also describes a conventional subspace method for recognition, including:

a PS of the rules (or sets of them) [at column 1, lines 52-60, as a subspace of the dictionaries of reference patterns orthogonalized on orthogonal axes].

As indicated, Nitta shows that a PS was known to artisans at the time of invention. Nitta [at column 2, lines 3-6] also points out that using the PS has the advantage of easily obtaining a recognition result. To the extent that Larkey does not necessarily describe a PS by describing a set of reference patterns, it would have been obvious to one of ordinary skill in the art of speech recognition at the time of invention to include the conventional concepts described by Nitta at least PS of the rules in the subspace method because then Larkey's pattern matching could easily obtaining a recognition result, for example of the potential candidates and alternates.

24. Regarding claim 2, Larkey also describes:

adapting is carried out repeatedly, in particular after completed recognition steps (or obtained results) [at column 8, line 50-column 9, line 2, as reference pattern adaptation is controlled by recognition event record initialization to adapt when a recognition event record needs to be freed up from a full recognition event database, and adapt after words had been recognized].

25. Regarding claim 3, Larkey also describes:

determining the APR is carried out repeatedly, so as to iteratively find the APR [at column 5, lines 63-68, as initially select the best candidate and utterances and update the best candidate and alternates later as a result of latter utterances];

the found APR fits best to the CP (or accent) [at column 5, lines 60-65, as the best candidate for each utterance of the speaker is placed in the recognition event record];

(in particular consider temporal pronunciation (or accent) variations of the current speaker or) in particular after completed recognition steps (or obtained recognition results) [at column 8, line 50-column 9, line 2, as reference pattern adaptation is controlled by recognition event record initialization to adapt when a recognition event record needs to be freed up from a full recognition event database, and adapt after words had been recognized].

26. Regarding claim 4, Nitta also describes:

the PS is generated (or provided) in a pre-processing step, in particular in advance in a recognition process [at column 1, lines 56-58, as a subspace of the dictionaries of reference patterns orthogonalized on orthogonal axes in advance].

27. Regarding claim 5, Nitta also describes:

the PS is derived from a plurality (or limited number) of Eigenpronunciations [at column 1, lines 58-61, as the subspace is M orthogonalized dictionary sets].

28. Regarding claim 7, Larkey and Nitta describe and make obvious the PS and included claim elements by dependency as indicated elsewhere in this Office action. Larkey also describes:

the PS is modified during recognition, in particular after completed recognition steps (or obtain recognition results or in particular by modifying the Eigenpronunciations) [at column 8, line 50-column 9, line 2, as reference pattern adaptation is controlled by recognition event record initialization to adapt when a recognition event record needs to be freed up from a full recognition event database, and adapt after words had been recognized].

29. Regarding claim 8, Larkey and Nitta describe and make obvious the PS and included claim elements by dependency as indicated elsewhere in this Office action. Larkey also describes:

determining a pronunciation related position in the PS [at column 7, line 68-column 8, line 3, as represent how similar an input utterance is from a stored reference pattern];

the position for pronunciation of a current speaker, in particular in accordance with a CP (or accent) of the current speaker [at column 13, lines 60-64, as based upon the tendency of the speaker to pronounce the same words in different contexts].

30. Regarding claim 12, Larkey also describes:

the CL is in each case based on (or derived from) a SL (or initial lexicon), (in particular on a canonical lexicon essentially containing pronunciation variants of native speakers of a given TL only or) in particular in the case of changing to a (different or) new speaker [at column 1, lines 15-29, as the reference patterns against which speech recognition is to be made were undertaken to be updated in response to a new speaker].

31. Regarding claim 13, Larkey also describes:

determining the APR is based on (or derived from) a comparison of the CP [at column 5, lines 3-8, as candidates are selected based on comparing speech input with the stored set of reference patterns];

in particular with respect to a given utterance (, recognition result or the like or in particular in the beginning of a recognition session with a different or new speaker) [at column 7, line 67-column 8, line 2, as speech recognition process algorithms represent an input utterance];

the comparison is with a canonical pronunciation [at column 1, lines 18-26, as the stored reference patterns typically created during training remain immutable].

32. Regarding claim 14, Larkey also describes:

the comparison is based on a recognition step [at column 5, lines 3-8, as candidates are selected based on comparing speech input with the stored set of reference patterns];

using a (starting or) canonical lexicon (SL) as the current lexicon [at column 1, lines 18-26, as the stored reference patterns typically created during training remain immutable].

33. Regarding claim 17, Larkey also describes:

from the CL recognition related information (, pronunciation variants or the like) which are not covered (by the speaking behavior or) by the current pronunciation of the current speaker are removed, so as to decrease the amount of data to be evaluated [at column 13, lines 40-59, as reference pattern representations of words to be recognized, that have the lowest quality scores based upon the speaker's updated pronunciation in different speech contexts, are weeded, then the reference pattern set is reduced].

34. Regarding claim 19, Larkey also describes:

System for recognizing speech capable of performing the method [at title, as speech recognition apparatus and method].

35. Regarding claim 20, Nitta also describes:

Computer program product, comprising computer program means adapted to perform (or realize) the method for recognizing speech (or the steps thereof when ii is executed on a computer, a digital signal processing means or the like) [at column 3, lines 8-9, as pattern recognition method performed by a computer].

Conclusion

36. The following references here made of record are considered pertinent to applicant's disclosure:

Cohen et al. [US Patent 5,268,990] describes phonological rules to cover dialectical variation for speech recognition to generate alternate pronunciations from baseform models.

Junqua [US Patent 6,253,181] describes representing speech recognition models in a eigenspace and projecting an utterance on the eigenspace to adapt speech models representing the utterance.

Kanevsky et al. [US Patent 6,442,519] describes clustering acoustic models to identify domains within a global database and modifying user models in response use by similar users.

T. Schultz and A. Waibel, "Adaptation of Pronunciation Dictionaries for Recognition of Unseen Languages," Proc. Specom, St. Petersburg, Russia, 1998, pp. 207-210, describes multilingual model combination and dictionary mapping for language recognition of languages not found in training data.

37. Any response to this action should be mailed to:

Mail Stop Amendment

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Alexandria, VA 22313-1450

or faxed to:

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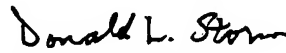
(703) 872-9306, (for informal or draft communications, and please label "PROPOSED" or "DRAFT")

Patent Correspondence delivered by hand or delivery services, other than the USPS, should be addressed as follows and brought to U.S. Patent and Trademark Office, Customer Service Window, **Mail Stop Amendment**, Randolph Building, 401 Dulany Street, Alexandria, VA 22314

38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Storm, of Art Unit 2654, whose telephone number is (571) 272-7614. The examiner can normally be reached on weekdays between 8:00 AM and 4:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see <http://pair-direct.uspto.gov>.

May 2, 2005


Donald L. Storm
Patent Examiner
Art Unit 2654